

May 2000

WELCOME

This newsletter is a free service intended to benefit racers and enthusiasts by offering answers to chassis questions. Selected questions will be presented, at my discretion. Readers are invited to submit questions by mail to: 155 Wankel Dr., Kannapolis, NC 28083; by phone at 704-933-8876;

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Mark Ortiz

We are nearing completion on a street stock 79 Camaro to run on ½ mile asphalt track with 10 degree banking in looong corners. We are considering trying a rear sway bar. We're being told to toss it, but I can't help thinking there's something there if we're willing to work on it. Any thoughts on what we might expect to encounter if we try running it?

Go ahead and try it.

If it is simply added with no other changes, a rear anti-roll bar will loosen the car. Used with softer springs to get similar overall roll resistance, it will result in a softer wheel rate in pitch and heave.

Be aware that your setup will require different springs than other people's. Of course, if you're running a rear anti-roll bar, you've moved beyond tuning by imitation anyway.

On a street stock, which usually cannot run jacking screws, anti-roll bars with drop links offer a way to adjust wedge and tilt (by changing link length), provided that bar preloading is not prohibited. Having bars at both ends expands the scope of such adjustments. You also have the ability to quickly loosen or tighten the car by disconnecting a bar.

All the tech books and articles I've seen tell you to kick out the left rear tire and tuck in the right rear tire to tighten a dirt car and give it better forward bite. This is commonly done for a dry slick track. I understand why the right rear bites better but how can moving the left rear out from the car give you better forward bite? You are taking weight off of it when you do this.

The reason rear wheel lateral positioning works as it does relates to the line of action of the forward thrust of the tire, rather than the load on the tire.

To illustrate, imagine your car was nose-heavy enough so you could take off one rear wheel and drive it as a tricycle. If you had only the left rear wheel, the car would try to turn right under power because all the thrust would be acting left of the center of mass. If you ran only a

right rear instead, it would try to turn left under power. (Motorcycle sidecar rigs really display this effect.)

With two rear wheels, moving either or both of them left or right has a similar effect, only more subdued .

Moving both rear wheels to the left, then, makes the car try to turn right more (or left less) under power. Exiting a left turn, this tightens the car. Consequently, the rear tires don't have to use as much of their grip for cornering and have more available for propulsion.

Toeing both rear wheels leftward (leading the right rear, with a beam axle) has a similar effect, and doesn't cost you left percentage.

How do you make a car less sensitive to track variations? On a dirt track modified, I am constantly having to adjust for track changes and many times am one notch behind the track. Is this the sport in it or is there a technical solution?

Here are two tools to help control variation in a car's balance as grip varies:

- 1) Static diagonal percentage / roll resistance distribution. If the car is close to right in average conditions but goes loose on slick and tight on tacky, add diagonal and use more rear roll resistance and/or less front. Idea here is to increase dynamic (running) diagonal at moderate lateral acceleration (low grip) yet decrease it at high lateral acceleration (high grip). For a car that goes tight on slick, reverse this strategy.
- 2) Tire stagger. Tire stagger has more effect as grip increases. Therefore, if the car has little or no rear stagger – meaning stagger effect is tightening the car – the car will feel this effect more when grip is good, and act tighter. As grip diminishes, the locked axle push effect decreases and the car goes toward loose. If the car runs generous stagger, you see an opposite effect. Of course, changes in stagger require compensating changes elsewhere in the setup, and in some cases the tire sizes you'd like aren't obtainable – but at any rate that's how it works.

If I change from 6.26 final drive to a 6.56 final drive, how much RPM gain can I expect, and will the lap times be faster or slower? I have good bite, but am getting beat out of the corners. Currently turning 6200 – 406 engine, 87" rear tires, 1/3 to 3/8 mile dirt track.

You'll be around 6500 at equal speed. If you're above that, it's because you're going faster! Assuming that 406 can survive, you should gain some speed.